

# EUROPEAN PATENT OFFICE

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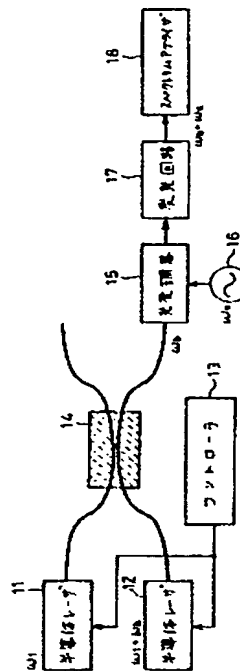
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TITLE : MEASURING METHOD OF  
FREQUENCY CHARACTERISTIC OF  
LIGHT MODULATOR AND MEASURING  
APPARATUS THEREFOR



ABSTRACT : PURPOSE: To conduct accurate measurement over a wide band of 10GHz or above by using for measurement a light beam signal generated from two continuous lights being different in an oscillation light frequency of a semiconductor laser.

CONSTITUTION: First, output lights of two semiconductor lasers 11 and 12 are synthesized by an optical synthesizer 14. On the occasion, each laser oscillation light frequency is controlled by a controller 13 so that a beat frequency  $\omega_b$  being a difference between the laser oscillation light frequencies be a value approximating to an oscillation frequency  $\omega_s$  of an oscillator 16 driving a light modulator 15. Said synthesized output light is made to enter the modulator 15. Meanwhile, the modulator 15 modulates the intensity of the light with an electric signal of the frequency  $\omega_s$  by an output of the oscillator 16. The modulated light is received by a light-receiving circuit 17. The amplitude of a component  $\omega_s - \omega_b$  at the time when the frequency  $\omega_s$  is varied in succession is proportional to  $F_m(\omega_s)$  and represents the modulation characteristic of the modulator 15 at the frequency  $\omega_s$ . Since a squared value of an output photocurrent is measured in a spectrum analyzer 18, measured frequency response is proportional to  $F^2_m(\omega)$  and an  $F_m(\omega)$  characteristic is determined by the conversion.

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